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Curriculum Vita
Dr. M. Hope

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OFFICIAL**Curriculum Vitae****Date:** September 20, 2002**Initials:**

SURNAME: HOPE
FIRST NAME: Michael
MIDDLE NAME(S): John
DEPARTMENT: Research
PRESENT RANK: Principal Scientist

POST-SECONDARY EDUCATION

University or Institution	Degree	Subject Area	Dates
Queen Elizabeth College, University of London, England	B.Sc.	Biochemistry	1970-73
Royal Free Hospital School of Medicine University of London, England	PhD	Membrane Biochemistry (cholesterol and membrane fusion)	1973-76

Special Professional Qualifications

PhD - Effects of modification of cholesterol content on chemically induced fusion in erythrocytes (Under the direction of Professor J.A. Lucy, Head of Department of Biochemistry, Royal Free Hospital, School of Medicine))

Ex. A

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EMPLOYMENT RECORD

University, Company or Organization	Rank or Title	Dates
Inex Pharmaceuticals Corp., Burnaby, British Columbia, Canada	Principal Scientist	1991-Present
Department of Medicine, University of British Columbia, Vancouver, Canada	Adjunct Professor	1998-Present
Department of Medicine, University of British Columbia, Vancouver, Canada	Assistant Professor	1991-1997
Department of Biochemistry, University of British Columbia, Vancouver, Canada	Adjunct Professor	1989-1991
Canadian Liposome Company, North Vancouver, BC, Canada	Vice President Research	1987-1991
Department of Biochemistry, University of British Columbia, Vancouver, Canada	Research Associate	1978-87
European Molecular Biology Organization, University of Utrecht, The Netherlands	Research Fellow	1977-78
Dutch Ministry of Education and Science Scholar at University of Utrecht, The Netherlands	Research Fellow	1976-77

(b) At UBC

Rank or Title	Dates
Research Assistant	1978 - 1980
Research Associate	1980 - 1987
Honorary Research Associate	1988 - 1989
Adjunct Professor (Biochemistry)	1989 - 1991
Assistant Professor (Medicine/Dermatology)	1991 - 1997
Associate Member (Biochemistry)	1992 - present
Adjunct Professor (Medicine/Dermatology)	1998 - present

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TEACHING

Courses Taught at UBC

Session	Course Number	Scheduled Hours	Class Size	Hours Taught			
				Lectures	Tutorial	Labs	Other
1979-80	Bioc 403 Enzymology	36	~ 100	18			
1980	Bioc 508 Blomembranes	48	~ 20	2			
1981	Bioc 509 Blomembranes	48	~ 20	4			
1982-84	Bioc 400 Human Biochem.	72	~ 100 - 200	4			
1983-85	Bioc 508 Blomembranes	48	~ 20	4			
1987 - present	Bioc 509 Blomembranes	48	~ 20	9 - 18			Variable teaching load
1980 - present	Bioc 449	72	~ 5 total			>72 each	Supervision of Honors Thesis
1988 - present	Bioc 302. General Biochem.	36	~ 200 - 400	9 - 18			Mln. 6 double lectures max.12.
1991	4th year U. of Victoria Membrane biochemistry	48	~ 20	8			Invited to teach membrane course
1998 - 2001	MedG521 Path531	36	~ 20	6			

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Graduate Students Supervised

Student Name	Program Type	Year		Principal Supervisor	Co-Supervisor
		Start	Finish		
S. Eastman	PhD	1987	1991	P. Cullis	M. Hope
R. Harrigan	PhD	1988	1993	P. Cullis	M. Hope
A. Bailey	PhD	1992	1996	P. Cullis	M. Hope
K. Mok	PhD	1993	1997	P. Cullis	M. Hope
W. Rodriguez	PhD	1988	1994	M. Hope	none
S. Klimuk	PhD	1992	1998	M. Hope	none
W. Mok	MSc	1995	1997	M. Hope	none
S. Raney	PhD	1996	2001	M. Hope	none

Continuing Education Activities

Management courses at the Justice Institute of B.C.

1. Basic Supervisory Program (7 hours) (1995)
2. Conflict Resolution (7 hours) (1996)
3. Problem Solving and Decision Making (7 hours) (1996)
4. Leadership and Teamwork, Empowerment and Delegation (7 hours) (1996)

Project Management

- Paper Management Consultants (30 hours) (1996)
 MS-Project (Advanced) Drake Computer Training (8 hours) (1996)
 Lab to Leadership (24 hours) (1998)

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Research or equivalent grants (grants were obtained competitively (C) or non-competitively (NC))

#	Granting Agency	Subject	COMP	\$ Per Year	YEAR	Principal Invest(s)	Co-Invest(s)
1	B.C. Heart and Stroke Foundation	Liposomes and the regression of atherosclerosis	C	\$26,000	89/90	Hope	Cullis
2	B.C. Heart and Stroke Foundation	Liposomes and the regression of atherosclerosis	C	\$26,000	90/91	Hope	Pritchard
3	B.C. Health Development Fund	Technetium labelled liposomes (awarded grant but did not take it due to other commitments)	C	\$22,000	90/91	Hope	
4	B.C. Science Council.	Liposomal anticancer pharmaceuticals - Funds matched by Canadian Liposome Co.	C	\$196,000	89/90 90/91	Cullis Hope Bally Madden Mayer	
5	DRES (Defence Research Establishment Suffield, Alberta)	Encapsulation of antibiotics	NC	\$50,000	91/92	Hope	
6	B.C. Health Development Fund	Lipid based topical delivery systems	C	\$15,000	91/92 92/93	Hope	Kitson
7	Hoechst (Pharmaceutical Company)	Topical formulation of corticosteroids	NC	\$30,000	92/93	Hope	Kitson
8	B.C. Health Development Fund	Multiple skin diffusion apparatus	C	\$13,200	92/93	Hope	
9	Johnson & Johnson (Pharmaceutical Company)	Lung surfactant formulation	NC	\$27,500	91/92	Hope	Madden
10	INEX Pharmaceuticals Corp.	Formulation of drugs, antisense and genes for topical and systemic treatment of skin diseases.	NC	\$100,000	92/93 93/94 94/95 95/96	Hope	
11	Sunstar Inc. (Skin Care Products - Japan)	Liposome training program for Company Scientist	NC	\$36,500	92/93	Hope	Cullis

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#	Granting Agency	Subject	COMP	\$ Per Year	YEAR	Principal Invest(s)	Co-Invest(s)
12	Lipex Biomembranes	Development of liposome technology	NC	\$9,000	92/93 93/94 94/95 95/96	Hope	
13	IRAP (National Research Council matching fund grant)	Development of a non-viral gene delivery system for the treatment of cystic fibrosis.	C	\$175,000	94/95 95/96	Hope	
14	B.C. Science and Technology Development Fund	Novel biopharmaceuticals for Intracellular delivery - funds matched by Inex.	C	\$200,000	95/96 96/97	Hope (PI for antisense and gene therapy)	
15	Medical Research Council	Gene Therapy	C	\$60,000	94/97	Bally Hope	
16	NSERC Technical Partnership Program (TPP grant)	Development of fusogenic delivery systems for the intracellular delivery of antibiotics.	C	\$80,000	96/97 97/98 98/99	Hope Finlay	
17	B.C. Science Council GREAT award.	Scholarship funding for S. Klimuk, graduate student - antisense therapy and delayed type hypersensitivity	C	\$17,000	94/95 95/96 96/97	Hope	
18	B.C. Science and Technology Fund.	Development of novel antibiotic delivery systems.	C	\$100,000	96/97	Hope	
19	B.C. Science Council GREAT award.	Scholarship funding for W. Mok, graduate student - Protein drug delivery	C	\$17,000	96/97 98/99 00/01	Hope	
20	DRES (Defence Research Establishment Suffield, Alberta)	Antiviral activity of polyIC, a synthetic double RNA polymer.	NC	\$33,333	97/00	Hope	
21	B.C. Science Council GREAT award.	Scholarship funding for S. Raney, graduate student - Topical ODN delivery	C	\$17,000	97/98 99/00 00/01	Hope	
22	Medical Research Council	Gene Therapy	C	\$60,000	97/00	Bally Hope	

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(c) *Invited Presentations*

#	TITLE	LOCATION	DATE
1.	Cholesterol and lipid induced membrane fusion	University of Utrecht, Utrecht, The Netherlands.	February 1977
2.	Role of nonbilayer lipid structures in membrane fusion	Royal Free Hospital, School of Medicine, University of London, U.K	December 1980
3.	Membrane fusion	University of B.C., Vancouver, Canada	January 1981
4.	Nonbilayer lipid structure and lipid fusion processes	Gordon research Conference on transport phenomena in lipid bilayers and biological membranes. Tilton, NH, USA	August 1981
5.	Liposomes and cancer chemotherapy	Canadian Association of Hospital Pharmacists Toronto, ON, Canada.	February 1987
6.	Liposomes and drug delivery	Cooper Pharmaceutical Laboratories, San Francisco, CA, USA.	June 1987
7.	Liposomes and topical drug delivery	Canadian Society for Investigative Dermatology, Japer, AL, Canada	February 1991
8.	Therapeutic applications of lipids	Dept. Biochemistry, University of BC, Vancouver, BC Canada	March 1992
9.	Membrane fusion and intracellular drug delivery	ISIS Pharmaceuticals, San Diego, CA, USA	January 1993
10.	Liposomal ciprofloxacin	DCIEM Liposome Conference, Toronto, ON, Canada	October 1993
11.	Liposomes: possible therapeutic application in the management of atherosclerosis?	Lipoprotein Research Conference, Cecil Green, University of BC, Vancouver, Canada.	February 1994
12.	Lipid vesicles and the regression of atherosclerosis	Canadian Lipoprotein Research Conference, Whistler, BC, Canada	April 1994
13.	Cationic lipids and gene delivery	Annual Meeting, Canadian Genetic Diseases Network, Parksville, Vancouver Island, BC, Canada	May 1994
14.	Pharmaceutical formulation and development of liposomal ciprofloxacin	Bayer Canada, Toronto, ON, Canada	April 1995
15.	Liposomes and the management of atherosclerosis	Parke-Davis Pharmaceuticals, Ann Arbor, MI, USA	October 1995
16.	Delivery of antisense oligonucleotides	Dermatology 2000, Vancouver, BC, Canada	May 1996
17.	Strategic partnering in biotechnology	Vancouver Enterprise Forum, Science World, Vancouver, BC, Canada	May 1996
18.	Non-viral gene delivery	Canadian Society of Investigative Dermatology, Whistler, BC, Canada	June 1996
19.	Intracellular drug delivery	Canadian Society of Microbiologists, Charlottetown, PEI, Canada	June 1996
20.	Antisense drug delivery	B.C. Cancer Agency, Vancouver, B.C. Canada	July 1997
21.	Antisense drug delivery	Antisense technology, San Francisco, US	June 1998
22.	Antisense drug delivery	Antisense 98, London, UK	October 1998

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#	TITLE	LOCATION	DATE
23.	Antisense drug delivery	Leukemia Society Workshop, Philadelphia, US	October 1999
24.	Antisense drug delivery	TIDES Conference, Tucson, US	April, 2001
25.	Oligonucleotide delivery and immune stimulation	LongBranch, New Jersey, US	February, 2002
26.	Liposomal delivery of antisense and conventional drugs	Pharmacia, St. Louis, MS, US	June, 2002
27.	Oligonucleotide delivery and immune stimulation	Membrane Research Conference, Davos, Switzerland	October, 2002
28.			
29.			
30.			

Other Presentations

Numerous presentations to pharmaceutical companies

Other

Conference Participation (Organizer, Keynote Speaker, etc.)

Co-Organizer, 1985 Western Canada, Biomembranes Conference, Vancouver, BC, Canada.

Memberships on scholarly societies, including offices held and dates

British Biochemical Society (Member)
American Chemical Society (Member)
American Association of Cancer Research (Member)
American Association of Immunologists (Member)

Memberships on scholarly committees, including offices held and dates

Member of Scholarship Evaluation Committee, Science Council of B.C. 1996 -

Editorships (list journal and dates)

Co-Editor of Special Issue of Chemistry and Physics of Lipids, "Liposomes" Vol. 40, p. 87-401, 1986
Asst. Editor Antisense and Nucleic Acid Drug Development

Reviewer (journal, agency, etc. including dates)

Reviewer for the following journals and agencies:

1. Regular Reviewer for Biochimica Biophysica Acta
2. Biochemistry
3. Chemistry and Physics of Lipids
4. Journal of Liposomology
5. Journal of Investigative Dermatology
6. Journal of Biochemistry and Biology
7. Journal of Lipid Research

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- 8. Journal of Analytical Biochemistry
- 9. Peer reviewer for National Research Foundation
- 10. Peer reviewer for Canadian Heart & Stroke Foundation
- 11. Peer reviewer for B.C. Science Council
- 12. Peer reviewer for NIH

Consultant (indicate organization and dates)

- | | |
|---|------------------|
| 1. Consultant, The Liposome Company, Inc., Princeton, N.J. | (1984 - 1987) |
| 2. Founder, Treasurer and Director - Lipex Biomembranes Inc., Vancouver | (1986 - present) |
| 3. Vice President, The Canadian Liposome Co. Ltd. | (1987 - 1991) |
| 4. Founder and President - Applied Lipid Systems Ltd | (1991 - 1992) |
| 5. Director and Principal Investigator, Liposome Research Unit | (1991 - present) |
| 6. Director and Principal Investigator, Skin Barrier Research Program | (1991 - present) |
| 7. Consultant Johnson & Johnson Pharmaceuticals | (1991 - 1993) |
| 8. Consultant Ault Foods Inc | (1990 - 1993) |
| 9. Founder and Director Drug Delivery, INEX Pharmaceuticals Corp. | (1992 - present) |

Awards for Scholarship (indicate name of award, awarding organizations, date)

Science Research Council Studentship Award, 1973 - 1976
Dutch Ministry of Education Science Scholarship, 1976 - 1977
European Molecular Biology Organization Fellowship, 1977 - 1978

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BOOKS*Chapters*

1. Cullis, P.R., Hornby, A.P. and Hope, M.J. "Effects of anaesthetics on lipid polymorphism" in: Molecular Mechanisms of Anaesthesia - Progress in Anaesthesiology. Vol. 2, (B.R. Fink, Ed.) Raven Press, 1980
2. de Kruijff, B., Verkleij, A.J., van Echteld, C.J.A., Gerritsen, W.J., Noordam, P.C., Mombers, C., Rietveld, A., de Gier, J., Cullis, P.R., Hope, M.J. and Nayar, R. "Nonbilayer lipids in the inner mitochondrial membrane" Cell Biology 1980-1981 (H.G. Schweiger, Ed.) Springer-Verlag Berlin, pp 559-571, 1981
3. Cullis, P.R., de Kruijff, B., Hope, M.J., Verkleij, A.J., Nayar, R., Farren, S.B., Tilcock, C.P.S., Madden, T.D. and Bally, M.B. "Structural properties of lipids and their functional roles in biological membranes" in: Membrane Fluidity in Biology Vol. 2(R.C. Akloia, Ed.) Academic Press, N.Y., 1982
4. Verkleij, A.J., van Venetie, R., Leunissen-Bijvelt, J., de Kruijff, B., Hope, M.J. and Cullis, P.R. "Membrane fusion and lipid polymorphism" in: Physical Methods on Biological Membranes and their Model Membranes (F. Conti. Ed.) Plenum Press N.Y., 1984
5. de Kruijff, B., Cullis, P.R., Verkleij, A.J., Hope, M.J., van Echteld, C.J.A. and Taraschi, T.F. "Lipid Polymorphism and Membrane Fusion", in Enzymes of Biological Membranes (A. Martinosi,ed.) Plenum Press, N.Y., pp. 131-204, 1984
6. Cullis, P.R., Hope, M.J., Nayar, R., Bally, M.B. and Tilcock, C.P.S. "Roles of Phospholipids in Exocytosis" in: Phospholipids in the Nervous System, Vol. 2: Physiological Roles (L. Horrochs et al, ed.) Raven Press, New York pp 71-86, 1985
7. Cullis, P.R. and Hope, M.J. "Physical Properties and Functional Roles of Lipids in Membranes" in: Biochemistry of Lipids and Membranes (D.E. Vance and J.E. Vance, Eds) Benjamin Cummings, Menlo Park pp.25-72, 1985
8. Cullis, P.R., Hope, M.J., de Kruijff, B., Verkleij, A.J. and Tilcock, C.P.S. "Structural Properties and Functional Roles of Phospholipids in Membranes, in: Phospholipids and Cellular Regulation (J.F.Kuo, Ed.) CRC Press, Boca Raton, Ch.1, pp.1-60, 1985
9. Cullis, P.R., Hope, M.J., Bally, M.B., Janoff, A.S., Madden, T.D. and Mayer, L.D. "Liposomes as Pharmaceuticals" in: Liposomes (M. Ostro, Ed.) Marcel Dekker, N.Y. pp. 39-72, 1987
10. Bally, M.B., Hope, M.J., Mayer, L.D., Madden, T.D. and Cullis, P.R. "Novel procedures for generating and loading liposomal systems" in: Liposomes as Drug Carriers (G. Gregoriadis, ed.) John Wiley and Sons, N.Y., pp. 841-853, 1988
11. Cullis, P.R., Hope, M.J. and Tilcock, C.P.S. "Lipid Polymorphism" in Cellular Membrane Fusion (J. Wilschut and D. Hoekstra,Eds) Marcel Dekker Inc., New York, 35-64, 1990
12. Cullis, P.R. and Hope, M.J. "Physical Properties and Functional Roles of Lipids in Membranes" in: Biochemistry of Lipids and Membranes (D.E. Vance and J.E. Vance, Eds) Elsevier, Amsterdam, New Comprehensive Biochemistry, vol. 20, pp 1-41 (1991)
13. Hope M.J, Nayar R, Mayer LD, Cullis PR. Reduction of liposome size and preparation of unilamellar vesicles by extrusion. in Liposome Technology, vol 1, 2nd edition (G. Gregoriadis, Ed) CRC Press p 123-139 (1992)
14. Bally MB, Mayer LD, Hope MJ, Nayar R. Pharmacodynamics of liposomal drug carriers: methodological considerations. in Liposome Technology, vol 3, 2nd edition (G. Gregoriadis, Ed.) CRC Press, p 27-41 (1992)
15. Hope, M.J., Rodriguez, W.V. "Freeze fracture of model membranes", in: Techniques In Modern Biomedical Microscopy, N.J. Severs and D.M. Shotton, Eds., Wiley-Liss, Inc., 235-253, (1995)
16. Hope, M.J. and Wong, K. "Liposomal formulation of Ciprofloxacin" in: Liposomes in Biomedical Applications, P. Shek, Ed., 121-134, (1995)
17. Cullis, P.R., Fenske, D.B. and Hope, M.J. "Physical Properties and Functional Roles of Lipids in Membranes" in: Biochemistry of Lipids, Lipoproteins and Membranes (D.E. Vance and J.E. Vance, Eds) Elsevier Science, Amsterdam, New Comprehensive Biochemistry, vol. 31, pp 1-33 (1996)

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5. REFERENCES

1. MUI, B., RANEY, S. G., SEMPLE, S. C., HOPE, M. J.: Immune stimulation by a CpG-containing oligodeoxynucleotide is enhanced when encapsulated and delivered in lipid particles. *J Pharmacol. Exp. Ther.* **298**, 1185-1192, 2001.
Ref ID: 30204
2. SEMPLE, S. C., KLIMUK, S. K., HARASYM, T. O., DOS, S. N., ANSELL, S. M., WONG, K. F., MAURER, N., STARK, H., CULLIS, P. R., HOPE, M. J., SCHERRER, P.: Efficient encapsulation of antisense oligonucleotides in lipid vesicles using ionizable aminolipids: formation of novel small multilamellar vesicle structures. *Biochim Biophys Acta* **1510**, 152-166, 2001.
Ref ID: 30206
3. BRAMSON, J. L., BODNER, C. A., JOHNSON, J., SEMPLE, S., HOPE, M. J.: Intravenous administration of stabilized antisense lipid particles (SALP) leads to activation and expansion of liver natural killer cells. *Antisense Nucleic Acid Drug Dev.* **10**, 217-224, 2000.
Ref ID: 30040
4. KLIMUK, S. K., SEMPLE, S. C., NAHIRNEY, P. N., MULLEN, M. C., BENNETT, C. F., SCHERRER, P., HOPE, M. J.: Enhanced anti-inflammatory activity of a liposomal intercellular adhesion molecule-1 antisense oligodeoxynucleotide in an acute model of contact hypersensitivity. *J Pharmacol Exp Ther* **292**, 480-488, 2000.
Ref ID: 29718
5. MUI, B., AHKONG, Q. F., CHOW, L., HOPE, M. J.: Membrane perturbation and the mechanism of lipid mediated transfer of DNA into cells. *Biochim Biophys Acta (In press)*, 2000 .
Ref ID: 29743
6. SEMPLE, S. C., KLIMUK, S. K., HARASYM, T. O., HOPE, M. J.: Lipid-based formulations of antisense oligonucleotides for systemic delivery applications [In Process Citation]. *Methods Enzymol* **313**, 322-341, 2000.
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7. KLIMUK, S. K., SEMPLE, S. C., SCHERRER, P., HOPE, M. J.: Contact hypersensitivity: a simple model for the characterization of disease-site targeting by liposomes. *Biochim Biophys Acta* **1417**, 191-201, 1999.
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Ref ID: 29025
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10. LUTWYCHE, P., CORDEIRO, C., WISEMAN, D. J., ST-LOUIS, M., UH, M., HOPE, M. J., WEBB, M. S., FINLAY, B. B.: Intracellular delivery and antibacterial activity of gentamicin encapsulated in pH-sensitive

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liposomes. Antimicrob. Agents Chemother. **42**, 2511-2520, 1998.
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11. MAURER, N.; WONG, K. F., HOPE, M. J., CULLIS, P. R.: Anomalous solubility behavior of the antibiotic ciprofloxacin encapsulated in liposomes: a ¹H-NMR study. Biochim. Biophys. Acta Bio-Membr. **1374**, 9-20, 1998.
Ref ID: 28546
12. RODRIGUEZA, W. V., KLIMUK, S. K., PRITCHARD, P. H., HOPE, M. J.: Cholesterol mobilization and regression of atheroma in cholesterol-fed rabbits induced by large unilamellar vesicles. Biochim. Biophys. Acta Bio-Membr. **1368**, 306-320, 1998.
Ref ID: 27663
13. WEBB, M. S., BOMAN, N. L., WISEMAN, D. J., SAXON, D., SUTTON, K., WONG, K. F., LOGAN, P., HOPE, M. J.: Antibacterial efficacy against an in vivo *Salmonella typhimurium* infection model and pharmacokinetics of a liposomal ciprofloxacin formulation. Antimicrob. Agents Chemother. **42**, 45-52, 1998.
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15. HOPE, M. J.: Gene Therapy: Recent advances and applications in dermatology. J. of Cutaneous Medicine and Surgery **1**, 109-118, 1996.
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22. BALLY, M. B., MAYER, L. D., HOPE, M. J., NAYAR, R.: Pharmacodynamics of liposomal drug carriers: methodological considerations. In: GREGORIADIS, G., ed., *Liposome Technology*, vol. 3, Boca Raton, CRC Press, 1993, pp. 27-41.
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23. HOPE, M. J., NAYAR, R., MAYER, L. D., CULLIS, P. R.: Reduction of liposome size and preparation of unilamellar vesicles by extrusion techniques. In: GREGORIADIS, G., ed., *Liposome Preparation and Related Techniques*, vol. 1, Boca Raton, CRC Press, 1993, pp. 123-139.
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Ref ID: 11254
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Ref ID: 17846
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Ref ID: 1343
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Ref ID: 379
28. WILSCHUT, J., SCHOLMA, J., EASTMAN, S. J., HOPE, M. J., CULLIS, P. R.: Ca(2+)-induced fusion of phospholipid vesicles containing free fatty acids: modulation by transmembrane pH gradients. *Biochemistry* 31, 2629-2636, 1992.
Ref ID: 12701
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Ref ID: 26117
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Ref ID: 14411
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Ref ID: 2020
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Ref ID: 2696

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Ref ID: 27632
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